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THE
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☞See advertisement on last page.

Poetry.

THE LAST LEAF.

I saw him once before,
As he passed by the door,
And again
The pavement stones resound
As he totters o'er the ground
With his cane.

They say that in his prime,
Ere the pruning knife of Time
Cut him down,
Not a better man was found
By the crier on his round
Through the town.

But now he walks the streets,
And he looks at all he meets
So forlorn;
And he shakes his feeble head,
That it seems as if he said,
"They are gone."

The mossy marbles rest
O'er the lips that he had press'd
In their bloom;
And the names he loved to hear
Have been carved for many a year
On the tomb.

My grand-mamma had said—
Poor old lady! she is dead
Long ago—
That he had a Roman nose,
And his cheek was like a rose
In the snow.

And now his nose is thin,
And it rests upon his chin
Like a staff;
And a crook is in his back,
And a melancholy crack
In his laugh.

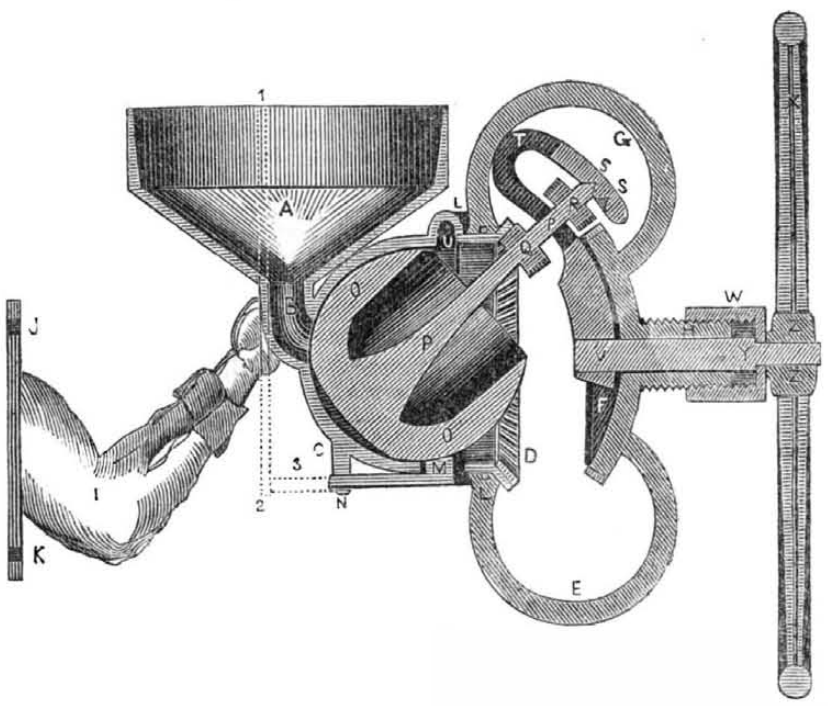
I know it is a sin
For me to sit and grin
At him here;
But the old three-corner'd hat,
And the breeches—and all that,
Are so queer!

And if I should live to be
The last leaf upon the tree
In the spring—
Let them smile as I do now
At the old forsaken bough
Where I cling.

There is Good in the World.

There is good in the world,
Though sin may defile it;
There is joy 'mid our tears,
Though man may revile it.
Though crime's mighty banner
Is in darkness unfurled,
Yet remember this truth—
There is good in the world!
In the worst of our kind
There's a remnant of good,
If we knew but the cord,
Or the sensitive mood,
By which their kind feelings
Might again be unfurled,
Then their actions would prove
There was good in the world!

EMERSON GODDARD'S IMPROVED GRINDING MILL.



This is an engraving of one of a numerous class of grinding mills contrived bv the same inventor, for grinding all kinds of substances, from the finest pigments, to the coarsest of any other materials. This Mill is ornamental in character as well as useful in construction and operation. The Mill is attached to the side of a room and supported by some tasteful standards such as the arm I, secured to the wall by screws or bolts J K, or the dotted lines 1, 2, 3, represent a substitute for the arm, &c. A is a tunnel for the reception of the paint to be ground. B, is the conducting pipe to the globular casing of the Mill C, which is the bed of the grinding apparatus. N is a short arm attached to the case, connected to the scraper M, which clears the Mill of paint as fast as it is ground. It extends through a hole in the case C, and the tub to receive the ground paint is placed below it. D, is the stationary geer wheel forming part of the case. E G, are two segmental arms forming part of another stationary gear wheel F. These arms are attached to the case at L L, by peculiarly formed dovetails and keys. In the centre of F, is a long journal box H, in which the main shaft V, turns by the fly wheel Z Z and the handle X. Attached to the shaft V, is a curved crank T, by which the revolving grinder O O, is driven by the shaft P P, which rests in one of the pivot bearings S S, and against part of the crank represented by the dark shading at T. On P P are two pinions Q and R, of ten teeth each, and Q meshes into the stationary gearing D, when P rests in the upper pivot box S, but when P rests in the lower S, the pinion R, meshes into the wheel F, and Q is ungeared.

Now it is evident that by the revolution of the shaft V and crank T, by the fly Z Z, and X, that if either of the pinions Q or R, are in connection with their respective gearings D or F, the globular grinder O O, will spin on its axis and this motion combined with the crank constitute its grinding principle. By the gearing D Q, the grinder is rolled over backward or in a direction contrary to that of the crank T and is intended to grind the finer kinds of paint. By the gearing F R, the globular cylinder O O, is rolled over forward or in the same direction as the crank T, and is intended to grind the coarser kinds of paints as there will be less grinding surface to which the paint will be exposed by this motion than by the other.

The pressure of the grinding parts and the changing of the axle P P from one pivot-box to the other is effected by turning the screw cap W, which presses against a shoulder Y, on the shaft V, which screw-cap screws on the journal box H. U is a semi-circular groove extending around the inside of the case C D, which prevents the escape of the paint except by the scraper M.

Persons desiring more information about this Mill, will receive the same by communicating post paid with the inventor at Petersham, Mass. He is desirous of selling rights on favourable terms with a full guarantee of protection, &c. in the same.

New Safety Mining Lantern.

Mr. Crane, of Birmingham, England, (says the Atheneum,) has invented a new Mining Lantern, to burn composition candles that require no snuffing. The principle, however, can be applied to oil lamps. The front of the lantern is made of strong glass; the back of polished tin; the two sides of wire gauze, soldered to the framing, having 900 apertures in a square inch of surface. Over the wire gauze sides are fixed covers of tin, hinged to the top of the lantern, which are kept fast by a small hasp at the bottom. The lower edge of each tin coverside is bent inward to rest against the framing—so that the tin plate may be kept at a distance of 3-4 of an inch from the wire gauze. Sufficient space is thus provided to allow of the passage of air for the supply of the light. No direct current of wind can have any effect upon the light, because there is no admission into the lantern but obliquely at each corner. The candle is held between four short wires, soldered in the dish of a moveable socket. The lid is pierced with two rows of holes, through which the heated air and smoke escape; and to the top is fixed a large ring, by which the lantern is carried and hung up. The ring is kept cool by a piece of tin, bent into the form of an inverted cone, soldered inside the lid, which causes the hot ascending air to flow toward the side, where it immediately escapes through the openings. To prevent any inflammable gas entering through the lid, a circular disk of wire-gauze is soldered inside the rim of the lid—so that no gas can enter but through the wire-gauze; this wire-gauze will never become red-hot, so that no explosion can possibly occur.

Camphor dissolved in ardent spirits is said by the Maine Farmer to be an effectual cure for vermin in cattle. The best cure is to feed well, house well, and use the card regular.

RAILROAD NEWS.

Hudson River Railroad.

In a circular recently issued by the directors, they say that they will be able to open the road to Peekskill in the month of July next, to Poughkeepsie in the Fall, and to Albany in season for next winter's business. If they do this, they will have accomplished a great project under many disadvantages.

Western Atlantic Railroad, Georgia.

This road is rapidly progressing and it is intended to have the work completed by October next.

Railroad Invention.

The Washington Union speaks in glowing terms about two new Railroad inventions—"one a new brake, and the other a new plan to enable the locomotive to surmount steep inclines without centre or rack rails." The Union does not describe the inventions, but says that "the models have been examined by them." We have some idea of Mr. French's plan to surmount steep gradients, as he communicated with us on the subject, but it is of a nature which full experiments alone can prove either useful or useless.

Railroad Damages.

At the Superior Court in Fairfield Co., Ct. Mr. Beers recovered $120 from the Housatonic R. R. Co., for two animals killed at a crossing. The Judge charged the Jury that at crossings, railroad companies have no peculiar or superior rights, and that in such places their agents are bound to use more than ordinary care least they trespass on the rights of others.

Rules for Travelling on Railroads.

A case was recently tried in the Saratoga Circuit Court held at Ballston Spa, in which the plaintiff, a passenger in the Troy and Saratoga cars, sued the defendant, (the conductor,) in an action of assault and battery for obliging him to leave a seat previously taken by another. A party of three had entered the car and taken seats facing each other, which in some cars may be done, and while one of the gentlemen was absent the plaintiff seated himself in his place, opposite to and facing one of the ladies. —The other coming in, requested the stranger to leave the seat, and he declining, the matter was referred to the conductor, who required him to take another seat, which was vacant. Some slight violence was proved, but the verdict, under the charge of the Court—Judge Willard presiding—was given for the defendant.

A Gigantic Corporation.

A pamphlet has lately been published, proposing the consolidation of the Railroads between Albany and Buffalo. There are now seven distinct Companies, whose bickerings and jealousies occasion frequent irregularities in the junction of trains. The project is, to create a new corporation, with $20,000,000 capital, which shall merge in itself all the existing companies.

Railroad Quarrel.

An affray of a serious nature occurred rely at Rochester, N. H., between the friends of the Great Falls and Conway Railroads, owing to some dispute concerning the location of the two roads, which cross each other in the village of Rochester. The friends of the Cocheco corporation commenced tearing up the rails of the other road, the consequence of which was a general fight between the two parties, during which one man had an arm broken, and several others were badly bruised. Several of those engaged in the affair have been arrested.

The Rockland County Messenger, N. Y. says that a large seam of coal has been discovered in that county.

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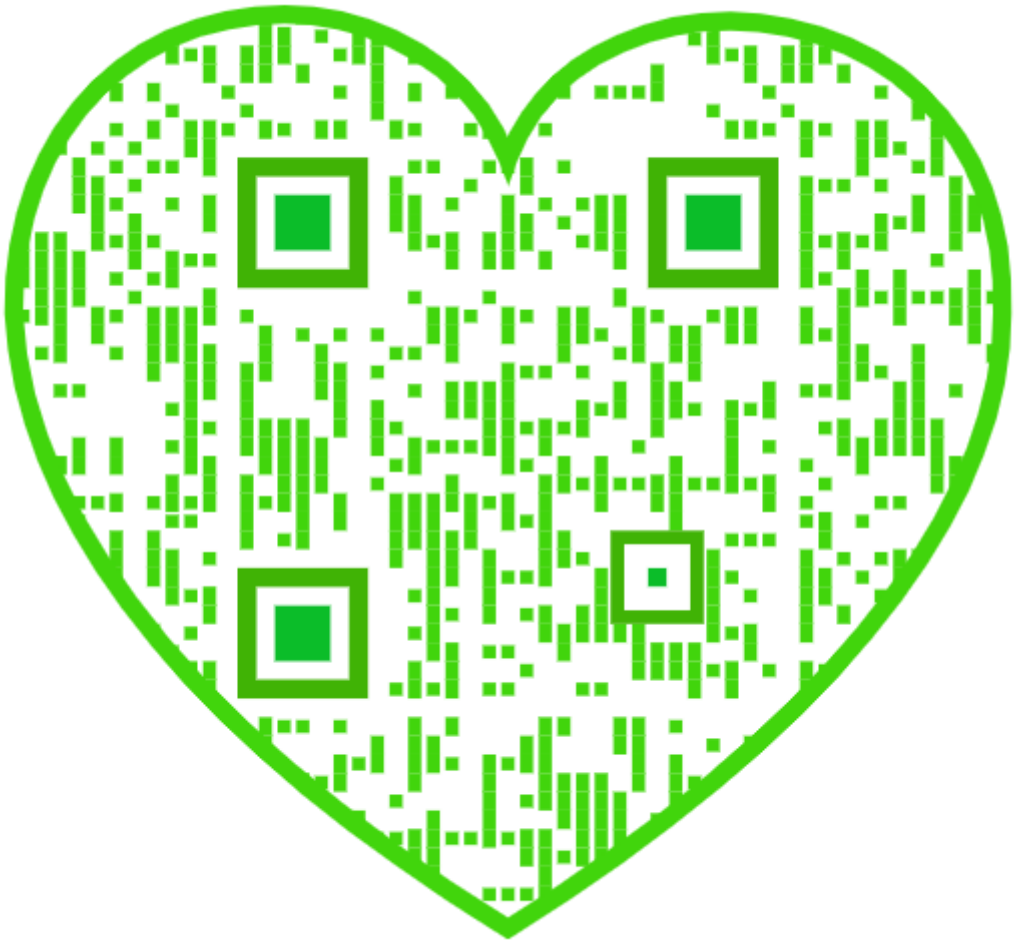

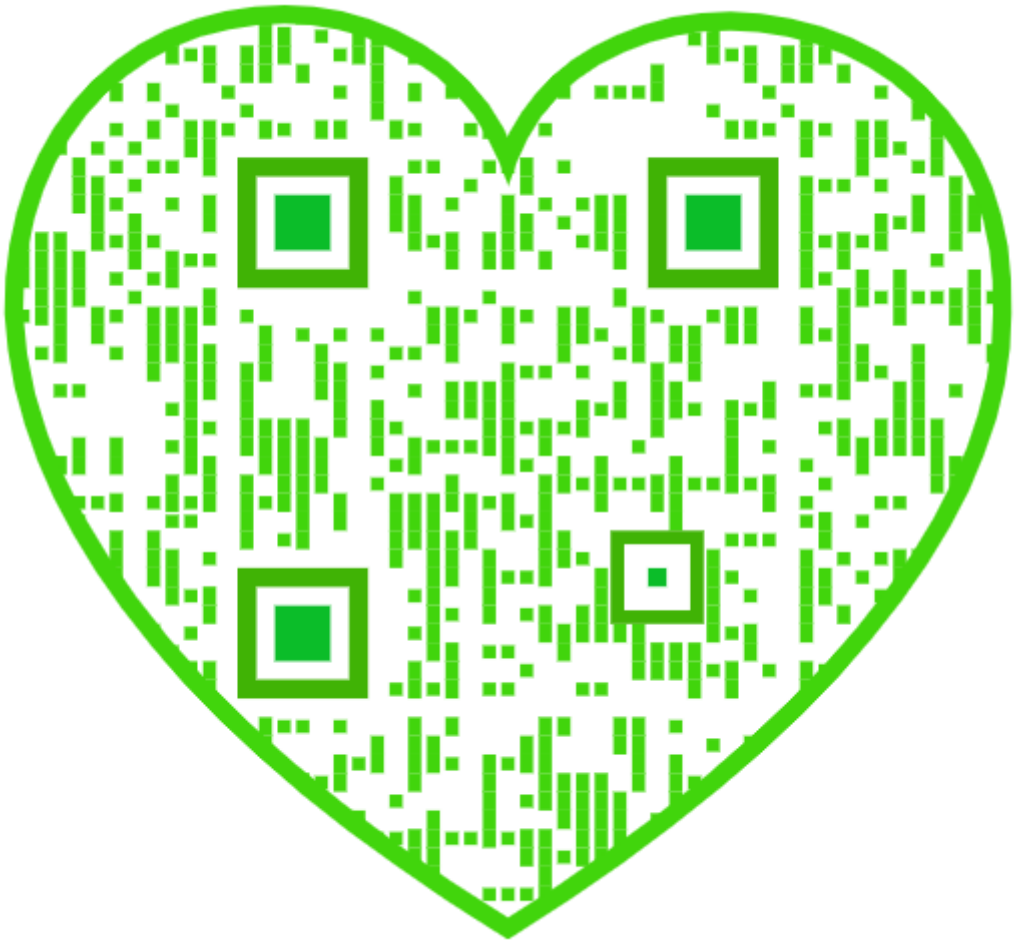

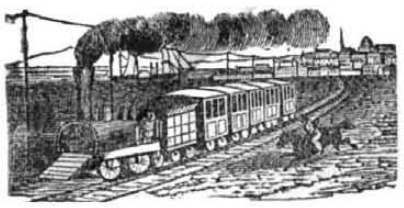

Silver Seven Cent Pieces.

Mr. Edward Hinckley, of Baltimore, publishes a communication demonstrating the great convenience that would result from the issuing of silver coins of the value of seven cents each. This project is very ingenious for any one who may make a calculation and find that such coin would entirely supersede the use of coppers, provide the payer and payee had a sufficient quantity of small change. Thus, to pay one cent, give three seven cent pieces and receive two ten cent pieces in exchange; pay two cents, give a seven and a five cent piece and receive one dime in exchange; to pay three cents, give ten and receive seven in exchange, &c. &c.

[Why not rather give us an amalgam one cent piece made of copper and silver, if the objection to the copper one is its weight and size. It would not require exchange for change

Hydraulator.

A novel Preparation for supplying the citizens of Jeffersonville, Va., with water, is in operation. The principle is somewhat like the telegraph, as follows: There are posts placed at a certain distances from each other through which posts are projecting hooks, curved, so as to hold a wire and at such a distance from the posts as to let the bucket pass and repass without any obstruction. The bucket has rollers attached, so that with a light impelling force, it passes to the water, fills itself, and with a wheel at the extremity of the line that a child can turn with ease is brought with rapidity to the required place. The price is $25 for the first one hundred yards, and 8 cents per yard for all over that distance.

The above paragraph from an exchange, shows that the citizens of Jeffersonville have read the Scientific American and seen the illustrated description of Messrs. Cox's Hydraulator..

Improvement of the Organ.

Mr. Amos Forrest, an ingenious organ builder of Hallowell, has invented a new improvement to the organ, whereby the organist may sit with his back to the main organ and facing the congregation, with the key board, &c. before him, separate from the organ to appearance, but connected underneath in such a manner as to secure all the benefits of the old style of make. This is a valuable improvement, as it relieves the organist from the awkward position of sitting with his back to the singers and congregation. An organist acting likewise as chorister, will find it much more convenient to be in a position where he may see all the arrangement of the choir, instead of being placed in a position where he is compelled to turn round in order to give directions or see the minister and congregation.

Ice.

The Ice Crop has been chiefly gathered and that which remains uncut is not only abundant in quantity, but equal to the best which has been housed. A larger amount of ice has been cut this season than probably ever has been cut in one year before. Not much less than three thousand tons of ice have been cut in Massachusetts, for home consumption and exportation, the present year. It may be a measure of wisdom with the dealers to provide a quantity of ice to guard against a failure next year. Our winters we trust, are not all to be as severe as the present.

Patent Medicines.

Dr. Edwards, in Congress tried to abolish the law to grant Patents for Medicines, and several physicians in this State petitioned to have a law prohibiting their sale unless their composition were printed on the labels. The physicians themselves should be compelled to tell the composition of their prescriptions upon the same principle, but no such bill can pass.

Extraordinary Locomotive Speed.

The Liverpool Times of the 8th ult. contains the following remarkable account from the Newcastle Courant, of the speed of a new first class engine on an English Railroad :—

It would appear that the progress hitherto made in the improvement of this class of machinery, does but tend to develope their wonderful capabilities. In our last we noticed a first class express engine placed on the York and Newcastle Railway, from the manufactory of Messrs. Stephenson, and we have to add another of the same class, previously sent from the manufactory of R. & W. Hawthorn, of this town, the performance of which, both in regard to speed and power, surpasses all previous experiments. Since placed on the line, it has taken the express train from York to Darlington in 40 minutes, a distance of 45 miles; and it is further computed (from results already known) that when the new rails are laid down on this portion of the railway, this engine will accomplish the distance with perfect ease in the short space of half an hour being at the surprising rate of 90 miles an hour. The velocity, although the greatest ever yet attained, either on the broad or narrow guage, is accomplished with an ease free from that apparent oscillating and undulating motion which characterises outside cylinder engines. Its arrangements are entirely new, and upon their patent principle, having the boilers as low as the latter class of engines; the top of the boiler, although four feet diameter, is only 7 feet 9 inches above the rails. The cylinders are 16 inches in diameter; the stroke of the piston 20 inches; the driving wheels are 6½ feet, and the carrying wheels 4 feet diameter, the wheels of which are entirely of wrought iron. The eccentrics and gearing also being outside of the wheels, render the whole engine compact, simple, and easy of access. Its symmetry and finish are much admired, and it is considered one of the finest specimens of locomotive power produced at this well known establishment.

Pulverized Potatoe.

Sometime ago a patent was taken out in England for preparing and preserving the substance of potatoes. It was done in the following manner: The potatoes were washed very clean, and boiled until the skin began to crack. They were then taken out and pealed, and all the eyes and specks taken off. They were then put into an iron cylinder that was was tinned inside, with small holes perforated through the bottom. A piston is then passed down, which forces the potato through the holes. When thus prepared, the potato is dried on the tin pans, at a heat of one hundred to one hundred and sixty degrees, after which it is packed in tight casks for future use.—*Maine Farmer.*

We noticed the above process in our columns sometime ago—it is not an English but Swedish invention, and has been practised for a long time in that country. We are glad to see our worthy contemporary notice it, as it has prompted us to call the attention of our farmers at a distance to trying the experiment with potatoes for exportation in light cases to this market. At present potatoes not worth the scraping, sell here for one dollar the bushel. Could the dried potatoes not be made a profitable article of export from the Southwest to this and the Boston markets ?

A Capital Summer Furnace.

A furnace made with strong wire gauze, in which our common gas is burned affords an intense heat, which can be regulated at will. This idea may lead to the construction of furnaces to employ gas for cooking in summer as a substitute for charcoal. How cleanly, and easily managed it would be. We may yet see the day, when this will be the common mode of cooking in warm weather.

Cold all the World Over.

A tremendous gale of wind visited Constantinople during the first days of the new year, accompanied by a fall of snow. The latter was driven into many of the houses through openings and crevices, in great quantity, and great damage was caused by the wind; one of the towers near the tomb of the Sultan Mahmoud was blown down, &c. There was snow in the streets to the depth of two and in some places three feet.

National Convention of Inventors.

This body met at Union Hall on Monday afternoon, and was organized by appointing Woodward Abrahams, Esq'r, chairman. A committee was appointed to report an order for business for the sessions, and also to select a speaker for the next evening.

On motion the convention then adjourned, to meet at 7 o'clock, evening session, when the following order of business was reported:

1st. The reading of the constitution of the Inventor's National Institute, by sections, and suggestions for modifications, &c.

2d. Reading the bills in addition to, and amendment of the several acts to promote the progress of the useful Arts.

The committee returned as officers of the Convention: Theodore F. Engelbrecht, Esq. of New York, as President; Alex. A. Brown, Vice President; R. H. Middleton, Secretary.

The committee on public address reported that George Gifford, Esq., of the New York Bar, would deliver an address, which report was approved.

Jordan L. Mott, Esq., of New York, read the bill now before Congress, asking a reformation in the Patent Laws, so as to effectually secure the inventor from infringement and piracy.—*Baltimore Sun.*

Well, we await farther developements of this association.

Robbery of the Government Jewels.

The National Police Gazette of this week containssome remarkable revelations respecting the robbery of the Patent Office in November, 1848. The Gazette has from the first charged that the robbery was committed by two well known thieves, Hand and Webb, under the direction of others, and that the object of these men was not so much plunder, as to be in position successfully to negotiate for the release from prison of a brother of Webb's who had been convicted of forgery. Letters received by President Polk, offering to restore the jewels, have been traced by the editors of the Police Gazette to Hand, and many facts are given countenancing the foregoing supposition.

Sulphuric Acid.

Liebig has said that the consumption of sulphuric acid may well indicate the state of civilization—the more that is consumed, the higher is the state of advancement, as it indicates the amount of soap that is used, and the general cleanly habits of the people, also the extent of its manufactures. This rule will not hold good in all countries, as the sulphuric acid is employed in Europe to make soda, by which their soap is made, whereas in this country, our soap ss made out of potash, in the manufacture of which no sulphuric acid is used. The amount of sulphuric acid consumed in Europe however, may well indicate any nation's prosperity there, and no nation is so conspicuous for the vast quantity of sulphuric acid which it consumes, as Great Britain. Sulphuric acid is made from sulphur imported into England principally from the Island of Sicily. There are some chemical works in England that make ten tons of sulphuric acid weekly, and an idea may be formed of the quantity manufactured when we state that all the soda is made from sulphuric acid, and the average quantity of soda manufactured yearly, amounts to no less than 88,000 tons.

Indestructibility of Cork.

In taking down, a few years ago, in France, some portion of the ancient Chateau of the Roque d'Ondses it was found that the extremities of the oak girders, lodged in the walls, were perfectly preserved, although these timbers were supposed to have been in their places for upward of 600 years. The whole of these extremities buried in the walls were completely wrapped around with plates of cork. When demolishing an ancient Benedictine church at Bayonne, it was found that the whole of the fir girders were entirely worm-eaten and rotten, with the exception however, of the bearings, which as in the case above mentioned, were also completely wrapped round with plates of cork. The fixings were completed by a layer of greasy-feeling clay, interposed between the cork and the masonry, and the parts of the walls opposite the ends of the timber were of brick.

Panama Cotton.

The Mobile Tribune has received from Panama, a sample of wild cotton procured from a tree on the top of a mountain some four leagues from Panama. The tree was about twenty-five feet high and thirty feet across near the top. The body four feet from the ground, measured four inches in diameter. The sample of cotton, although carried for some time in the pocket, and of course materially injured in appearance, is nevertheless, of a fine silky texture.

New Epidemic.

A new Plague or Epidemic has appeared in the Philadelphia Alms House and the City Hospital. It produces mortification of the mouth, gums and cheeks, ending speedily in death. Large numbers have died of it in both institutions. It has probably arisen from scarlet fever and small pox, or is a combination of these two diseases, which, with purulent opthalmia, have been very prevalent in the Alms House, where patients are kept in very ill ventillated rooms. It has thus far been confined principally to children.

The Potatoe.

Professor Mulder, so well known by his discovery of proteine, (the much controverted substance), has fulminated a solemn condemnation of the potato. "As an article of food," says a learned chemist "this tuber is not nourishing, and is the cause of the moral and physical degradation of the nation who make use of it," &c. The question, however does not exclusively lie in the consideration of the nutritive principles, but, whether the same are or are not of easy assimilation: for we might as well feed on gutta percha, caoutchouc, or urea, if these principles alone were kept in view

The Oldest Pastor in the United States.

The venerable Dr. Nott, of Franklin, Connecticut, received the visits of his flock, on the 23d ult., to congratulate him on his having reached his ninety-sixth birth day. Dr. Nott was born in 1754. He was ordained and installed over his present charge, "the Congregational Church in what is now Franklin, then Norwich, West Farms," on the 13th of March, 1782; and has consequently exercised the pastoral office during a period of nearly sixty-seven years.

Iron Rails in Use and out of Use.

Rails in use do not corrode like those out of use. The cause of this is attributed to magnetism, which by the experiments of Mallett and Ritter seems to be produced in rails after they are sometime in use—both induced and permanent magnetism, each rail being magnetic with polarity.

British Census.

The British Government are going to take a census of the whole empire and a systematic plan has been laid down, like the last adopted in numbering the people of the United Kingdom, to be pursued throughout the empire. This is the first regular census to be taken of the British Empire, but is has been customary to take a census of England every few years, from time immemorial.

Curious Discovery.

In the great Pyramid of Egypt is a small opening at the top, the depth of which has never been sounded. Another aperture of the same size exists at the foot of the Pyramid. It was long conjectured that these two openings communicated with each other, but no means could be devised to establish the fact till the problem was solved recently by the ingenuity of an Arab. He took a cat and her kittens, placed the old cat in one aperture and the kittens in the other, and stopped up both with stones. The next day he opened them and found cat and kittens all together at the foot of the long passage.

Ship Blocks.

The business done in this article of manufacture is larger than is usually supposed. A vessel of a thousand tons burthen requires about five hundred blocks of various sizes in fitting her out, and a single firm in this city are now supplying thirty-three sail of vessels and ships.

A "bloody oyster" fight recently took place on the east shore of Virginia. The number of oysters slain is not known, but there were a few.

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For the Scientific American.

The Mineralogist.—The description and locality of every important Mineral in the United States.

(*Continued.*)

CACHOLONG.

Occurs in layers or crusts of a milk white color. Scratches glass. It has a pearly lustre. Found at Pittsfield and Deerfield, Mass.

CALCAREOUS SPAR.

Occurs in crystals of a white, yellowish, red, or gray color, of a shining lustre, and yields to the knife. Specific gravity, (weight compared with water) 2.7. Its localities are numerous. Beautiful specimens are found at Leyden and Lockport, N. Y. Often called *hog tooth* spar.

CARNELIAN.

Occurs in rounded and flat masses of a reddish color and glimmering lustre. It is nearly transparent, and infusible. Fine specimens are found near Lake Superior; at Deerfield, Mass.; at the Falls of St. Anthony, and at Herculaneum, Mi.

CELESTINE, FIBROUS.

Occurs massive, in plates, and in fibrous crystals, of a milk white color with a tinge of blue. Loses its color by keeping. Easily broken. Specific gravity 3.80. Found in the Bald Mt., at Frankstown, Pa.

CELESTINE, FOLIATED.

Occurs in masses and crystals, of a white, gray, or blue color and translucent. Localities are, Moss Island and Lockport, N. Y.; near Baltimore; Strontian Island in Lake Erie.

CERIUM, ITTRI-CALCAREOUS OXIDE OF.

Occurs in masses and crusts, of a grayish white or red, or violet blue. Its texture is granular and lnstre glimmering. Yields to the knife. Specific gravity 3.44. Infusible. Forms a yellow solution with muriatic acid. Found at Franklin, N. J.

CHABASIE.

Occurs in crystals of a white, yellowish, grayish, or reddish color. Fusible; unattacked by acids. Specific gravity 2.70. Found at Chester and Deerfield, Mass.; Hadlyme, Ct.

CHALCEDONY.

Occurs in masses, round, icicle form, or in crusts, of a white, bluish, grayish, yellowish, brownish or greenish color, rough surface, and glassy lustre. Harder than flint, and translucent. Infusible. Specific gravity 2.60. Often found in dark colored, hollow crusts, whose cavities are lined with quartz crystals. Fine specimens of this beautiful and valuable mineral are found at East Haven, Ct; Little Britain, Pa.; Middlefield, Lynn and Deerfield, Mass.; Pompton Plain, Pracknes Mt. and Sussex Co. N. J.; Perry, Hocking and Athens Co's. Ohio.

CHIASTOLITE. (MACLE.)

Occurs in crystals, whitish on the outside and blackish on the inside. Infusible. Specific gravity 2.94. Found abundantly at Westford, Lancaster and Stirling, Mass.; Brunswick and Georgetown, Me.; Croydon, Cornish, Charleston, Langdon, Allstead and Bellows Falls, N. H.; Litchfield, Ct.

CHLORITE.

Occurs in masses of a greenish color and shining lustre. Somewhat soapy to the touch; yields to the knife. Specific gravity about 2.65. It is found at Harper's Ferry, Va.; Rye, N. Y.; New Haven, Saybrook and Brookfield, Ct.; Topsham, Me.; Chester Co. Pa.; West Stockbridge, Charlestown, Bridgewater and Brighton, Mass.

CHLORITE SLATE.

Occurs consisting of plates like slate, of a greenish color and glistening lustre. Easily cut. Found at Williamston and Westfield, Mass.; New Haven and West Haven, Ct.

CHLOROPHŒITE.

Occurs in small round masses, of a greenish color; transparent; turns black by exposure to air. Soft; brittle. Specific gravity about 2. Unaltered by heat. Found at Southbury, Ct.; Gill, Mass.; Turner's Falls, Vt.

CHLOROPHANE.

Color, pale violet; translucent. Placed on a hot iron in the dark, it emits a beautiful emerald green light. Occurs at New Stratford, Ct.

CHRYSOBERYL.

Occurs in masses, rolled pieces and crystals, of a green color with a tinge of yellow or brown. Nearly transparent; lustre, shining. Acquires electricity by friction. Specific gravity 3.80. Infusible. Found at Haddam, Ct.

CHRYSOCOLLA.

Occurs in masses, kidney-shaped, and resembling a cluster of grapes, of a green color, shining lustre. Translucent; brittle; yields to the knife. Specific gravity 2. Infusible, but turns black. Found at the Somerville copper mine, N. J.

To be continued.

Magnetic Cures.

The external application of the magnet to cure disorders, is not a modern discovery. It was known and used to cure the gout as early as the year 500. Actius says that those who "have convulsions find relief by holding a magnet in their hands." In the 15th century some of the physicians prescribed the application of the magnet as a cure for the toothache. About the end of the 17th century, magnetic tooth picks and ear pickers were quite fashionable to prevent pains in the teeth and ears. Magnets were used more than two hundred years ago, to remove iron filings that had accidentally fallen into the eyes, and this although used by Fabricanus Hildanus, has lately been revived as a new invention. At Fairbairne in Belgium when the workmen in the large iron works frequently get small particles of iron in their eyes, either by chipping or grinding, there are large magnets suspended where the workman immediately goes and gets the iron or steel whipped out of his eye, in shorter time than a dentist could extract a tooth.

About 1770, Father Hehl, of Vienna, invented steel plates of a peculiar form which he magnetised and employed in the cure of various diseases. From him Anton Mesmer derived his knowledge of their use and he subsequently invented animal magnetism sometimes called mesmerism, after its inventor. In 1798 Perkins used metallic magnetic bars, called tractors, which were drawn over the diseased parts of the body and were supposed to cure many maladies. These tractors were patented. Dr. Falconer made wooden tractors of the shape and color of those made by Perkins and employed them on a large scale at Bath Hospital, England, and he found that from them the very same effects and cures were produced as by those made of iron. A few years ago, galvanic rings came extensively into use and they are worn by many at the present time. They are perfectly useless, owing to the way in which they are constructed. The galvanic belt of Mr. Rodgers, represented in No. 17 present vol. of the Scientific American is at least constructed with a knowledge of the laws of magnetism and if there is any virtue in the application of it to cure disease, it certainly will not fail for want of being made correct.

Magnets have a great power, but there is much, very much hid from us respecting its application to useful purposes. The greatest feat of power displayed by any magnet that we have ever heard of, was with one of Dr. Farady's powerful electro magnets, which attracted an iron candlestick that was standing near one of its poles on the table, that it cleared its way of jugs, glasses, &c. on the table, and sprung to the electro magnet with as much vehemence, as the yard black pudding sprung to the nose of the old dame in the story of the "Three Wishes"

Air and the Lungs.

The lungs can contain 22 pints of air though 9 1-2 pints is as much as is inhaled at a single inpsiration. In ordinary and placid breathing we inhale about one pint at an inspiration; public singers, when they "take breath" as it is called, inhale from 5 to 7 pints. Eighteen respirations take place in a minute, it takes therefore, 18 pints of air every minute and 57 hogsheads every 24 hours to supply the lungs. Seventy-two pulsations occur in one minute, and 130,680 in 24 hours.

The dark venous blood passed and repassed from the veins through the heart to be purified into vermillion color arterial blood, by contact with fresh air in the lungs, amounts to 24 hogsheads in 24 hours. It is then sent through the arteries to nourish the whole system distributing its vitality, to be recovered again by fresh air from the lungs.

"From the construction of most of our buildings (says Dr. Gibson in a recent lecture) it would seem that the builders thought that pints of air were sufficient in place of hogsheads."

The Way Inventors are Plundered.

The following story is one which we know to be true, and no doubt, many such cases have occured in many places. The extract is taken from the article to which we allude on our Editorial page.

Many years since I knew the author of a long sought improvement in the arts. When announced, the possibility of producing the article in the simple and cheap way stated, was denied. Those conversant with kindred professions believed not till the operation of the process was shown and then it was approved and adopted.

In this country its introduction was pretty effectually opposed till two or three years only of the patent had to run. At that time, circumstances of a local nature were likely to render it valuable to its author, but those whose interests it was foolishly supposed to affect combined to destroy it in public estimation.—It was denounced with virulence and its inventor maligned as if he had committed a felonious offence. An adventurer was employed to write it down. (He actually sued his employers for the balance of one thousand dollars promised him, and they compromised by the payment of a sum somewhat less.)

A suit, prolonged over a week, was tried before Judge T——, the origin, history and merits of the invention searchingly investigated, and the Patent sustained by a verdict accordant with an opinion decidedly expressed by one of the soundest and most sagacious judges of inventions that ever occupied a seat on the Bench of the Supreme Court.

Subsequently, another suit for infringement came on before an inferior tribunal, in the interval between the death of Judge T— and the appointment of his successor, when a verdict was given, agreeable to the instructions of the Court, for the defendant, and consequently against the patent.

So far, there was nothing peculiar in the history of the case, nor in the fact that the inventor never reaped anything more from the invention than a harvest of persecution, and the wear and tear of feelings for which no money could compensate. But, something rich followed.

The defendant had never denied the right of the inventor to the invention—no one doubted its originality. Impressed with its value, he had repeatedly made offers to purchase it, and the day before the trial renewed them, offering —— thousand dollars to settle the suit and for the patent for its unexpired term. This was accepted—but the next morning he withdrew it, saying, with sang-froid truly edifying, that his associates in the trade had reconsidered the matter and preferred risking another attempt to break down the patent. Some of them were his witnesses—and virtually their own, for they were equally infringers.

Duly to celebrate a decision which awarded to them the plaintiff's oyster and to him the shell, they assembled once more and voted a silver vase to the defendant, with an inscription much richer than the pitcher. It is of 27 carats.

"Presented to —— ——, Esq. as a tribute of respect for honorably *defending their* RIGHTS, in a suit by—— ———, for an alledged infringment on patent. April, 18—."

Then follow the names of the donors—nine injured worthies!

It is not an uncommon thing for burglars, counterfeiters, swindlers, *et id genus omne*, to evade conviction by legal sophistries; but who ever heard of a gang assembling together on a confederate thus escaping, to compliment him for "defending *their* RIGHTS"! and presenting him with a piece of plate for his services in defeating attempts made by those they had plundered to recover their own! If these gentry are in the habit of awarding such tributes to professional merit—or, as impolite people would say, of handing down to their children such damning proofs of their own rascality—it is, I suppose, not commonly known.

One of the subscribers to the pitcher was an Alderman. On the occasion referred to, he perceived an opportunity of serving the city in another capacity—*i. e.* by supplying the public buildings with the new article. Active in preventing the authorities from employing the inventor, he patriotically secured the job himself, and with that view added, for two or three years, another business to his own. An Angelo in jurisprudence, he, too, occasionally sat with the Recorder to punish petty villains.

Phrenologists inform us that other men beside Bardolphs and Pistols are prevented, by defective organizations, from distingnishing between moral guilt and Old Bailey convictions. The opinion is strengthened by the preceeding case.

Mercury in Hermetically Sealed Glass Vessels.

Prof. Oersted has discovered that a change takes place in mercury kept in hermetically sealed glass vessels, but that it is very slow and not perceptible for years. He had observed them twenty years ago in a glass bulb, and after some years a black one. He took up the subject in 1828, experimenting with four bulbs, two of white and two of green glass, carefully weighed, in order to detect any portion of air that may be admitted through the pores or fissures of the glass. The weight, however remained unaltered. In July, 1839, a small change was visible. At first a feeble ring of yellow powder adhering to the glass was observed where the mercury had been a long time in contact with the glass. And again in a new place, under similar circumstances, a new ring was formed, and so on. The surface itself upon which the mercury had rested some time, had a thin covering of yellow adherent powder. In the course of years the yellow powder became black. The mercury had lost a great deal of its fluidity, and it adhered slightly to the glass. The order in which the two colors follow each other, indicate that they are not produced by oxidation. In the green bulbs no change was visible. In 1845, Prof. Oersted procured twelve bulbs, six of which should contain beside the mercury, atmospheric air, the air of the other six being expelled by boiling the mercury; three of each series being white, and three green glass. In July 1847, there was no sensible change in the first series (namely mercury mixed with air,) but in the second (from which the air had been expelled) change had taken place in all but one. Rarefaction of the air had no connexion with the phenomena, but the boiling of the mercury seemed to have some influence upon them. Analysing the two powders, sulphur was detected. But as a yellow compound of mercury and sulphur contains oxygen, and as no oxygen was found in the black powder, it may be questioned whether the first compound takes oxygen from the air of the bulb and returns it in passing to the state of the black one, or that some hitherto unknown exchange takes place between the elements of the glass and the mercury.

Fulton and Napoleon.

A singular circumstance, says Allison, occurred at this time, (1801,) which demonstrates how little the clearest intellect can anticipate the ultimate result of the discoveries which are destined to effect the greatest changes in human affairs. At the time when all eyes in Europe were fixed on the Channel, and the orators of the French tribunate were wishing for a "fair wind and thirty-six hours," an unknown individual (Fulton) presented himself to the first Consul, and said—"The sea which separates you from your enemy gives him a great advantage. Aided alternately by the winds and tempests, he braves you in his inaccessible isle. This obstacle, his sole strength, I engage to overcome. I can, in spite of all his fleets, at any time, in a few hours, transport your armies into his territory, without fearing the tempests or having need of the winds. Consider the means which I offer you" A most singular proposition was this, truly. Napoleon so far entertained it, as to commit the plans and details of Mr. Fulton to a Commission of the most learned men which France could produce, and this was all that the First Consul's vast engagements would allow him to do. The most learned Commission reported to Napoleon that it was 'visionary and impracticable.' Such was the reception which steam navigation, that has done so much, first received at the hands of Philosophy.

Part of the wreck of the Ocean Monarch has been washed up at Southport.

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New Inventions.

New Flax Spinning Machine.

Mr. Charles Clark of West Troy, N. Y. has invented a new machine for spinning flax, which gives the material two twists during every revolution of the flyer without adding to the machinery of those machines at present in use. By it he can therefore spin twice as much yarn with the same number of revolutions of the flyer as those in use. In combination with this he employs a hanging balance frame which operates the receiving bobbin that takes up the spun yarn, so as to move the bobbin the exact distance to wind up the correct amount of yarn spun every revolution of the flyer. The receiving bobbin, has therefore an intermittent rotary motion governed by a guide rod leaning on the spun yarn on the bobbin, and worked by ratchets and a ratched wheel which receive motion from an eccentric on the axle of the flyer. This machine has been pronounced " a very valuable and great improvement" over those now in use, by those who are able to judge of its merits. Machines that are in use at present for spinning yarn, give only one twist during every revolution of the flyer, and the take-up bobbins have a continuous rotory motion.

Improved Chimney.

Mr. O. L. Wheelock, of Watertown, N. Y. has invented a beautiful and useful improvement on chimneys which we judging from a model consider to be valuable. It is constructed partly of sheet and partly of cast iron, the cast being outside and made of an ornamental character. The chimney will not weigh much —it is cheap and perfectly safe, and can be made to receive a number of pipes from different stoves, and by being partly double, it is combined with a ventillating apparatus which makes it both a smoke and ventillating chimney.

New Sewing Machine.

Mr. J. Lerow of No. 26 State-st., Boston, has invented a new sewing machine, called the " Rotary Sewing Machine." A sample of its work has been sent us, which is very neat—the stitch is good and does not pull out like others we have seen. It is different from other machines got up for sewing. We will say no more about it at present as we may be able to present an engraving of it in a few weeks.

Improved Loom for Weaving Plain and Figured Work.

Mr. Talbot, of Portsmouth, N. H. has invented an improved loom which is represented to weave any pattern at the rate of 110 picks per minute, and to change any pattern in an incredible short space of time, and change it to weave plain cloth in a few minutes likewise.

Improved Planing Machine.

Mr. E. Allen, of Manchester, Mass. has invented an improvement in planing machines which has been represented to us as possessing qualities of a very superior character. We have seen some of its work, which is indeed astonishing, and the more so, as we were informed that no rotary planes were used, and that it does its work very rapid.—The merit of the invention is in a new way of feeding.

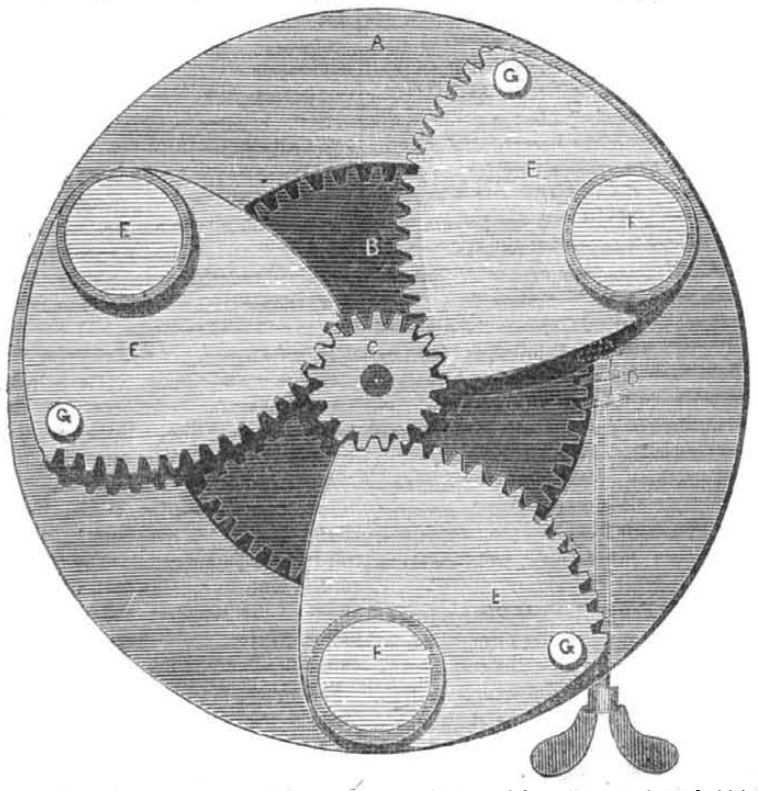
Improvement of the Microscope.

By the Cincinnati Commercial, we learn that Mr. Bruno Haseart, optician in that city, has made some astonishing improvements on the microscope whereby its powers are extended to a degree hitherto supposed unattainable. In examining the scale of an insect 3-1000 of an inch in length, 72,900 secondary scales was counted on its surface, and so minute were they, that it would take 37,800,000,000 to cover a square inch.

This instrument will be a valuable acquisition to natural science—by it the naturalist will be enabled to explore new fields of organic and inorganic matter.

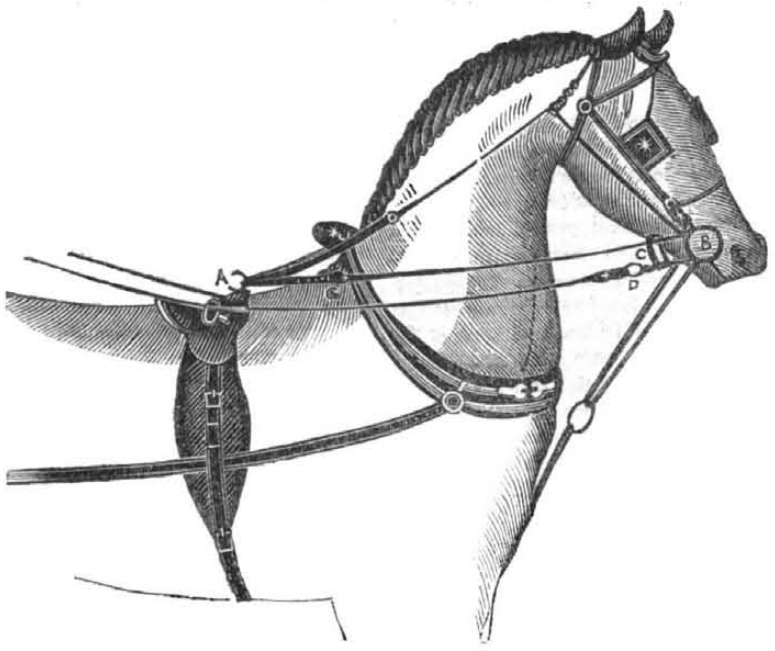
MARTIN AND PARRY'S UNIVERSAL CHUCK.

This is an improvement on Chucks invented by James W Martin and E. Parry, of the Northern Liberties, Philadelphia. It will be understood by machinists and will commend itself. This is a face view of the Chuck showing the face plate A, geered sectors E E E, the pins G G G, the pivots F F F, and the spur pinion C, and screw D, which operates the plate spur wheel B. The axis or pivots of the cog section E, are placed at equal distances apart and are secured to the face plate by nuts. The pins G, are the jaws of the chuck, to retain firmly every article to be turned or drilled &c. that may be placed in the lathe.



Operation.—The article to be operated upon being placed at or near the centre of the Chuck or axis of the pinion C, and power being applied to the screw D, turning it to the right, it will be seen that the spur wheel B, and the pinion will move towards the right from above and the pins or jaws G, being affixed to the sectors E, by a curvilinear motion approach the centre till they come in contact with the article to be turned and hold it firmly between them. The combined action of the screw on the spur wheel and the pinion on the sectors, gives the chuck great power and ease in action—firmness in holding, and being of simple construction, may be easily kept in repair. Measures have been taken to secure a patent

SAFETY BRIDLE BIT.



This is a safety Bridle Bit invented and secured by Mr. Henry Seitz, of Marietta, Pa. This bit is expected to supersede eventually all others, either for riding or driving, combining, as it does, the common snaffle, so arranged with the pulley, as to give any person perfect power over the most vicious or frightened horse. It obviates the objections made to the severe bits now in use, which from their painful action, often make a spirited horse rear, kick and try to run away. This bit is pleasant in its action on the mouth, causing no pain whatever, and has the requisite power when wanted—no horse having been found able to resist it.

The operation is as follows: The rein is hooked firmly to the saddle at A, passing through the loop C, into the bit over the roller at B, and securing it fast to the ring D, which prevents it from drawing back and forms the check rein now in use, and to which the driving reins are buckled and pass back to the driver. For horseback, the loops and rings are dispensed with, the rein being continuous, forming two reins one of which is thrown over the saddle horn or strapped to the pummel, and the other to the rider's hand—both reins can pass through the rings of a martingal. For ladies it is particularly recommended on account of its safety and power, as a horse is by no means able to throw his head sufficiently low to kick.

Horses have been successfully driven with this bit, that were set aside as beyond management as harness horses with ordinary *severe* bits, from the habit or invariable practice of running away in spite of the utmost endeavors of their driver—now they are good and serviceable horses. These bits are manufactured only by Haldeman and Seitz of Marietta, Lancaster County, Pa. who will attend to all orders concerning the sale of the same. The patent right of this invention has been secured, and it is coming fast into use.

LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending February 27, 1849.

To James L. Norton, of Perry Township, Pa. for improvement in Cooking Stoves. Patented Feb. 27, 1849.

To Henry Reichert, of Shippensburgh, Pa. for improvement in Flood Fences. Patented Feb. 27, 1849.

To David Minesinger, of Beaver, Pa. for improved detached metallic Cartridge Tube, &c. for Fire Arms. Patented Feb. 27, 1849.

To Julius King, of Bordentown, N. J. for improved machine for dressing Nuts and Bolt Heads. Patented Feb. 27, 1849.

To David McComb of Port Gibson, Miss. for improvement in Presses. Patented Feb. 27.

To G. F. J. Colburn, of Newark, N. J., for Protector Slide for Door Locks. Patented Feb. 27, 1849.

To L. K. & P. Day, of Sacarappa, Me., for for improvement in Weavers' Temples. Patented Feb. 27, 1849.

To George Draper, of Ware, Mass., for improvement in Temples for Looms. Patented Feb. 27, 1849.

To Amaria Pierce, of Philadelphia, Pa. for improvement in Gas Apparatus. Patented Feb. 27, 1849.

To William Wright, of Providence, R. I., for improved Metallic Packing for Pistons.—Patented Feb. 27, 1849.

To S. R. Hunter and M. Merrill, of Cortlandville, N. Y. for improvement in the manufacture of Hubs and Axles. Patented Feb. 27, 1849

To J. Frost & S. Munroe, of Albion, Mich. for improvement in machinery for separating Flour from Bran, Patented Feb. 27, 1849.

To Pratt & Graverend, of New York City, for improvement in suspending Telegraph Wires. Patented Feb. 27, 1849.

To Stinchart & Taggart, of Charlestown, Mass. for improvement in Brakes for Cars.—Patented Feb. 27, 1849.

To Calvin Delano, of East Livermore, Mass. for improvement in Horse Rakes. Patented Feb. 27, 1849.

For the week ending March 6, 1849.

To J. & J. Higgins, of East Greenwich, R. I. for improvements in machinery for Dressing and Folding Cloth. Patented March 6, 1849.

To E. B. Bigelow, of Boston, Mass. for improvement in Looms for weaving Brussels Carpets. &c. Patented March 6, 1849.

To R. S. Tilden, of St. Louis, Mo. for Punching Machine with a combination of adjustable Guages. Patented March 6, 1849.

To Huttman and Koch Karnelio, of Philadelphia, Pa. for improvement in Fire Escapes. Patented March 6, 1849.

To James Shields and James Cole, of New York City, for improvement in Stoves for heating apartments. Patented March 6, 1849.

To A. H. Boyd, of Saco, Me. for improvement in delivery and take-up motion of Looms. Patented March 6, 1849.

To Thomas Ashcraft, of Randolph Co. Ala. for improvement in Cotton Presses. Patented March 6, 1849.

To Jeremiah Myers, of Biddeford, Me. for improvements in the Let-off motion of Looms. Patented March 6, 1849.

To Marcus Maxim, of Newcastle, Pa. for improved Spike Machine. Patented Mar. 6, 1849.

To Geo. H. Corliss, of Providence, R. I. for machine for Cutting Teeth of Bevelled Gear. Patented March 6, 1849.

To Henry Quinn, of New Alexandria, N. J. for improvement in Drying Grain. Patented March 6, 1849.

To Geo. H. Corliss, of Providence, R. I. for improvement in cut-off and working the Valves of Steam Engines. Patented March 6, 1849.

To John Elgar, of Baltimore, Md., for improved tubular two-part Rail. Patented March 6, 1849.

To Wm. Joslin, of Waterford, N. Y. for improvement in Rope Machinery. Patented March 6, 1849.

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NEW YORK, MARCH 17, 1849.

Inventors and Inventions.

One of the best articles that we have ever read upon the rights and wrongs of inventors, appeared in the Tribune of the 3d inst. The author of it understands his subject well and speaks the truth with "all boldness." There is not a more deeply injured class of men than inventors. It is too common for people utterly devoid of genius themselves or too lazy to exert it, to sneer at the studious, inventing man and laugh at his labors. Men of an inventive turn of mind, are generally of an enthusiastic temperament, and no man can be eminent without such a disposition. Owing to this fact, many of their schemes fail as well as those of other men. How often are such failures the subjects of rejoicing to brainless neighbors, people of too blunted minds to appreciate the labors or mental qualities of the inventor. On the other hand when some beautiful and simple invention is brought before the public, it is quite common to hear men throwing aspersion on its merits. Well has the author of the article referred to above, hit off this class. He says : "Some inventions are so simple and apparently so obvious, that the general wonder is, how they escaped detection so long. Of them it is common to hear petty boasters assert that they could bring scores of such things to light as easily as kiss their hands ; (an expression of ancient vaunters.) But let them try to perform what they are so confident of being able to do, and they'll find out one thing which they do not seem to know—viz., that it is much easier to ridicule than realize an original idea however small or trifling,—to deride a simple contrivance, than to produce one. The plainest devices cost their authors a great deal more than can be imagined by those who glance at results and measure value by imposing show and complexity. Pins are small affairs, but the machines that now make them were not conceived by small-sized intellects. The inventors and improvers of nails and gimlets, have higher claims to fame than all the monarchs that ever reigned. And happy for Humanity would it be if those now reigning, and their supporters too, were compelled to earn their bread by nail and gimlet making."

The claims of inventors are now beginning to attract more attention, and such pens as that of him who wrote the above sentences, will do much to enforce those claims and defend their rights.

Many poor inventors have suffered by professed friends—friends who were friends to get the invention from the inventor, and then let him starve, if he pleased. Many societies got up for the avowed purpose of protecting inventors, have turned out to be their plunderers. We are pledged in principle and duty to advocate and defend the rights of the true inventor, and happy are we to grasp the friendly hand of a co-laborer—one who can bring experience and talent to overthrow the most doughty champion of wrong.

In a number of instances, good and useful inventions are denied protection, while some that are insignificant are promptly shielded by "seal and patent." This has happened in a great number of instances with those who have applied for patents. Some good things have been rejected for an apparent want of novelty, while others have been protected for useless novelty.

Report of the Commissioner of Patents.

The whole number of applications for patents made during the past year was 1628, and no less than 607 caveats have been filed. This is 95 more patent applications and 74 more caveats filed than during 1847. The ratio of applications will increase with the increase of population. The Commissioner says, "a much larger proportion of applications are rejected than patents granted, but some may yet be reconsidered and passed." The excess of receipts over all disbursements is $8,670 85. The number of applications waiting to be examined January 1st, was 539, a reduction of 359 from the 1st of August. This shows that the increase of the Examining force at the Patent Office will soon be upon a level with the applications, and inventors will not be held so long in suspense as formerly. Mr. Burke justly and boldly alludes to "the remorseless invasion of the rights of patentees by persons having no claims nor pretensions to the name of inventor." He says that "the wilful infringer of a patent right is as base and corrupt as a common thief—that he is impelled by the same corrupt intent, and should be hunted from society with the same inexorable perseverance." Bravo! say we, to these sentiments.

A great number of inventions have been presented of an inferior character and others of a very superior character. This will always happen. Mr. Burke says, that a person had recently applied to him to know how he could be protected in the way to make Russia Sheet Iron—the secret of which he had found out. Our laws grant a patent to none but the inventor, but in this case willingly would we see Congress grant him a patent for it—he deserves it—our country would be benefitted by it. In England he would receive full encouragement and Protection. The Commissioner recommends to Congress the lowering of patent fees to foreigners. This is good. Did our country know what a benefit would result from it—a law would soon be passed for that purpose. We intend to agitate it. We request attention to the following part of the Report.

"It has come to the knowledge of the undersigned, since his last report, that one method of evading the rights of patentees in the United States, is the setting up of machines in Canada, or other neighboring British provinces, where the articles manufactured by such machines are fabricated, and are then brought into the United States and sold, to the great injury of the American patentee.—As the sale of the products of a patented machine has been decided by our courts not to be an infringement of the patent, the patentee has no remedy in the case now under consideration.

The protection, therefore, of our own citizens holding patents under this government would seem to require some legislation for the suppression of these fraudulent practices carried on within the limits of a foreign jurisdiction. A provision authorizing the seizure and forfeiture of all fabrics and manufactures which have been produced in a foreign jurisdiction, by machines protected by patents in the United States, and brought into this country for sale, would probably be an adequate remedy against such a violation of the rights of the American patentee."

The Commissioner does not refer to British subjects, but Americans who have fled across the lines to pursue a more than privateer calling. We disagree with the Commissioner in respect to the manner of arresting the evil—it cannot be done in the way he recommends. Suppose a vessel comes here with lasts from England, where Mr. Blanchard's patent has expired—what is to be done? Suppose from Canada—how is it to be settled, that they were made by Mr. Blanchard's machine? No way that we can imagine. Now all this must be done in justice, if such a bill would be passed. Our plan is to accomplish the object by treaty. We believe that our Government and the British Government would soon arrange the matter, just let them enter upon it in a proper spirit. Our navigation laws will soon be reciprocal and so might our Patent Laws As nations speaking the same language and possessing like mechanical tastes, our patent laws should be reciprocal. This would effectually root out the interlopers in Canada. We believe that the Canadians, would go for the measure. We shall refer to some points of this able report again.

Diplomatic Smuggling.

An article appeared a short time ago in one of our leading papers, stating that one of our diplomatic agents abroad had been detected in smuggling British goods, as articles for his family. We do not believe that there is a particle of truth in the whole story.

The Discoverer of Etherization.

We have received a very interesting Report on the discovery of the Letheon, from the pen of Dr. Edwards, of the House of Representatives, the author of the drug-inspection law now in operation, which protects the community from adulterated medicines which used to be manufactured abroad for the American market. Dr. Edwards was chairman of a select committee to whom was referred the memorial of Dr. Wm T. G. Morton, of Boston, asking compensation from Congress for his discovery of the anesthetic property of sulphuric ether. The report embraces an elaborate examination of Dr. Morton's claim to the honor of a discovery, disputed now, it is well known, by Dr. Charles T. Jackson, of Boston, as it was also disputed by the late unfortunate Horace Wells, of Connecticut, and it is this inquisition and the result which gives the report so much interest. The judgment of the committee is, that Dr. Morton is entitled to the merit of discovery, and the merit they award him accordingly. "The great thought," says the Report, page 29, "was of producing insensibility to pain ; and the discovery consisted in that thought, and in verifying it practically by experiment. For this the world is indebted to Dr. Morton."

We heard that the French Institute conferred, a short time ago, an honorary distinction upon Dr. Jackson for the discovery of the letheon. Our Congress has awarded, after a full investigation, the honor to another, and they have had the best means of investigation.—"Honor to whom honor is due."

More about Balloons.

The Presse, of Vienna, Austria, has the following :—"Venice is to be bombarded by balloons, as the lagunes prevent the approaching of artillery. Five balloons, each twenty-three feet in diameter, are in construction at Treviso. In a favorable wind the balloons will be launched and directed as near to Venice as possible, and on their being brought to vertical positions over the town, the fire will be given by electro magnetism. Each of the five bombs affixed to the balloon is in communication by means of a long isolated copper wire with a large galvanic battery placed on the shore. The fusee is ignited by connecting the wire. The bomb falls perpendicularly, and explodes on reaching the ground. By this means twenty-five bombs a day may be thrown, supposing the wind to be favorable. An experiment made at Trexis on the 9th, succeeded completely."

We suppose that the Austrians wish to try the experiment with the Vienese which Marshal Jourdan tried with the Austrians in 1794 as it is said that he obtained the victory of Fleuries over the Austrians by reconnoitreing their position by means of a balloon.

Among the singular announcements of the day, connected with this subject, is one from a Mr. Brown, of Portland Place, London, who requests that American and English capitalists will join him in establishing "a balloon railway from Washington, in the United States to any particular spot in California." Mr. Brown states that the distance, 3000 miles, on favorable occasions, may be accomplished by hundreds of balloons in three days !

Another gentleman announces that he possesses important information, known only to himself, "where gold may be obtained in pure lumps from an ounce to a pound weight and upwards, and sufficient to ballast a ship in a few hours, without deviating far from the ordinary course of vessels." This "valuable secret" the gentleman will disclose "on easy terms."

Mr. Brown wishes to do something *brown* no doubt. His balloon is anticipated by Mr. Pennington, who exhibited a cigar balloon a few years ago at Washington, and beside our New York Revoiloidal Spindle Air Propeller, will be on her second trip to California before Mr. Brown is able to get here from London. Uncle Johnny should stick to Portland Place. If he ventures to balloon it, we are afraid that when he gets up, he may get to land, but not to *port*.

A new bell weighing 10,000 pounds, for our City Hall has arrived from Andrew Meneely's Foundry at west Troy N. Y.

Blanchard's Invention.

To New England belongs the credit of having invented two machines that have produced complete revolutions in two departments of American industry. We allude to the Cotton Gin of Whitney, and the machine invented for turning irregular forms by Thomas Blanchard. This latter machine is a beautiful invention in more respects than one. It can whittle out the spoke of the rolling carriage. It can turn out the stock of the rifleman's gun. It can turn out the last that shapes the dainty slipper for the lightsome foot of a Cinderella, and it can copy the bust of statesman or hero. During the inauguration Mr. Blanchard was in Washington and had some splendid busts of Henry Clay and General Taylor. The finish of the busts exhibited perfection in machinery, a perfection in copying denied to man with all his heaven born genius. Some of the ladies in Washington were so fascinated with the splendid likenesses, that they pressed their glowing lips to the marble from love to the originals, and this was certainly a great compliment to the inventor of the machine—yea more, it was, unwittingly to them, doing homage to *his* genius.

The Electric Light, &c.

Our contemporary the "Independent Monitor," Tuscaloosa, Alabama, enquires of us, "What has become of the Electric Light of Mr. Paine?" We cannot tell. Has our friend read our opinion regarding its probable utility?

We see the receipt which we published about a year ago for welding iron and steel, flourishing around among our contemporaries as a recent French invention. The new composition candles too, which we arranged and cooked up in 100 words from a specification covering 5 pages of English manuscript, is going round too, fully credited to another paper, that should not, but does make free trade a good trade in other people's property. Well we can afford to "lend our lantern."

Patent Case.—Blanchard's Patent.

The case of Blanchard's patent, wherein Mr. Eldridge, of Philadelphia, was the defendant, for an alleged infringement of the aforesaid patent, was brought to a termination before Judge Kane in the U. S. Circuit Court, Philadelphia, on the 8th inst. This has been a tedious and a very troublesome case. We have been informed that Judge Kane delivered the best and most scientific view of Mr. Blanchard's patent that has ever been presented.—He ordered a commitment to be issued unless Mr. Eldridge will say that he will never again infringe, and will pay the costs.

Utica Mechanics Fair.

The mechanics of Utica, N. Y. have been holding their Annual Fair. Complaints have been made against some of the prominent manufacturing establishments for not sending articles to the exhibition. We have heard complaints recently against the Utica mechanics for their want of spirit, "they do not exhibit the same spirit now that they did a few years ago." This should not be—they have good men and true in that city and they must wake up and move onward with more elastic steps.

Back Volumes of the Scientific American.

A few more copies of complete sets of vol. 3 of the Scientific American may be had at the office, either bound or in sheets. Price neatly bound $2 75, in sheets suitable for mailing $2. Send in your orders early if you desire them filled for we have but a few more copies left, and the number is growing less every day.

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Galileo.

(*Continued.*)

On the 7th of January, 1610, he discovered three of Jupiter's satellites. When he first observed them, two were on the east side, and one on the west side of the planet, all in a straight line parallel to the ecliptic, and much brighter than fixed stars of their magnitude. He regarded them at first as fixed stars; but on chancing to direct his attention to them again on the 8th of January, he found all the three to be on the west side of Jupiter, and nearer each other. Disregarding the circumstance of these stars having approached each other, he considered how Jupiter could be to the east of them, when the day before he had been to the west of two of them; and the conclusion he came to was, "that the motion of Jupiter was *direct* contrary to astronomical calculation, and that he had got before these two stars by his own motion." On the 10th, however, another observation showed him only two stars, and both on the *east* side of Jupiter. It was evident that the planet could not have moved from west to east on the 8th of January, and two days after have moved from east to west. Under these circumstances he came to the conclusion, that the different appearances arose from the motion of the stars themselves. On the 11th there were two stars on the east side of Jupiter, but the one was twice the size of the other. This fact threw a new light upon Galileo's difficulties, and he immediately drew the conclusion which he considered to be indubitable, that there were in the heavens three stars, which revolved round Jupiter in the same manner as Venus and Mercury revolve round the sun. On the 13th, Galileo discovered the fourth satellite of Jupiter. Having made this discoveries, he named them the Medicean Stars, in honor of his patron, Cosmo de Medici, grand duke of Tuscany, and published an account of them in a work entitled the "Sidereal Messenger."

These discoveries, the fruits of the newly discovered telescope, astonished the scientific world. The ideas, however, which Galileo enunciated in his "Sidereal Messenger," were attacked on all hands by the Aristotelians.—They even denied the existence of the four satellites which Galileo had discovered: some affirming that he had been deceived by reflected rays; and others, that it was a ruse to afford himself a subject for discussion. Their existence having been at last indisputably established, others began to claim the priority of discovery, and to pretend that they had discovered additional satellites of Jupiter. Some gave the planet as many as twelve moons; but they were gradually found out to be fixed stars, and Galileo remained the original discoverer of the four secondary planets.

Before the close of 1610, Galileo discovered Saturn's ring, although not conscious of its true nature, or the appearance when highly magnified. He described Saturn as a triple star, each retaining its relative position.—Shortly after, he discovered that Venus presented phases like the moon, when at different parts of her orbit. He likewise discovered spots on the sun's surface, from which he calculated that that luminary had a motion on its axis, completed in about twenty eight days In 1612, he published a treatise on floating bodies, displaying a knowledge of many true principles in hydrostatics. It was violently attacked; but the master mind of Galileo refuted his opponents as soon almost as they appeared.

The great objection raised by the priesthood and followers of Aristotle, against the doctrines advocated by Galileo was, that they were contrary to Scripture, and ran counter to the doctrine of the church. In refuting these and other objections, Galileo added to the calm arguments of reason the bitterness of sarcasm. In 1613 he published a letter to prove that the Scriptures ought not to be taken as guides in philosophy, and that the language found in the Bible was wrong interpreted, and might with equal propriety have been urged against the doctrines of Ptolemy. The storm which had been gathering over the devoted head of the philosopher at last broke forth. He was denounced from the pulpit by one Caccini, a friar. The general of the order to which this friar belonged apologized for this attack; and, stimulated by a strong love of truth, and to silence his antagonists, Galileo published another letter defending his views of Scripture, as applied to his own and the system of Ptolemy.

These letters were denounced to the inquisition, and steps taken to bring Galileo before the bar of that sanguinary tribunal. It is a disputed point whether Galileo, on hearing of the steps taken against him, went to Rome of his own accord, or whether he was cited there He appeared at Rome at the latter end of 1615, and was shortly after summoned before the Inquisition, to answer the charges of having heretically maintained the motion of the earth and the stability of the sun, and with having taught it to others. The Inquisitors met, and after considering the charges, decreed, that Galileo should be enjoined to renounce these opinions, and to pledge himself neither to teach, defend, nor publish them; and that in the event of refusal, he should be thrown into prison. To these Galileo agreed, and was dismissed.

Philip III. king of Spain, a country at that time extensively engaged in maritime enterprise, had offered a reward for the discovery of an improved mode of finding the longitude at sea. To this problem Galileo turned his attention, and proposed to make the satellites of Jupiter subservient to effecting this purpose. Communications were made to the Spanish Court, and so great was Galileo's desire to carry out his project, that he offered to go to Spain and reside there till he had communicated a knowledge af his method. Nothing satisfactory came out of these negotiations, which were occasionally revived during the period of ten or twelve years.

In 1618, three comets visited our system, and engaged the attention of the learned men of the time. Galileo was prevented by illness from making any observations on these erratic bodies; but he became deeply involved in controversy respecting them, and it is asserted, maintained the opinion that they were meteors.

Cardinal Maffeo Barberini, a sincere friend of Galileo's, was raised to the papal throne; and, although in ill health at the time, Galileo set out for Rome, to congratulate the new pope on his elevation, and secure a continuation of his friendship. He was kindly received; and after repeated audiences, the receipt of several presents, and the promise of a pension to his son, he was dismissed by the pope with every expression of friendship and regard.

(*To be continued.*)

Gas for Illumination.

The moderns possess a remarkable superiority over the ancients in their better acquaintance with the phenomenon of natural science. No comet now disturbs the peace of men and no spirits ride upon the wind and cloud. Our better acquaintance with gas, shows how elevated the knowledge of the *present* is, in comparison with that of the *past*.

A remarkable instance of the application of a limited knowledge possessed by the ancients of the explosive nature of a natural gas, is related by Justin, when the Gauls under Brennus, about 388 years before Christ, had overrun a great part of Greece, and cut off the supplies of the Temple of Apollo at Delphi; the priests succeeded in dispersing the besiegers by setting fire to the gas issuing from the hill under the Temple, which blowing off a fragment of the rock, killed a great many, and terrified and dispersed the remainder.—This gas is described by Justin as a "cold spirit" issuing from a fissure from the depth of the earth, near the Altar, and exciting the mind of the priestess, induced her to give the replies of the god. Now this gas or cold spirits, as it was called, being described as having an explosive quality, and capable of parting the rock, we can easily identify as the same or at least similar in its effects to our present illuminating gas, which is well known to all to be highly explosive when combined with a certain quantity of atmospheric air; and from its exciting the mind of the priestess, it might probably contain some portion of nitrous oxide, or the laughing gas of the present day.

In 1739 appeared the first account of attempts to distill coals in close vessels or retorts, and collect the products of gas in bladders for experiments, and which experiments were frequently made and continued up to 1792, a period of upward of 50 years, during which time, although the practicability of easily procuring a cheap and beautiful artificial light by the distillation of coals, had been so repeatedly manifested, still the tardy nature of men's minds, and the total absence of a disposition for improvements, prevented any steps being taken for the introduction of such a valuable discovery.

In 1792, Mr. Murdock, a talented engineer of the time, residing at Redruth in Cornwall, where he was employed in introducing the then newly-invented steam-engine of the celebrated James Watt, for draining the deep and valuable tin and copper mines of that county, constructed an experimental coal gas apparatus, and lighted his dwelling. After this he removed it to Soho, near Birmingham, to the steam-engine factory of Boulton and Watt, where he lighted their manufactory, also other factories and places in a similar manner. The plan adopted at this period was of the most primitive kind, being merely a close cast-iron vessel fixed in a furnace, in which, on its being partially filled with coal, and made red hot, the gas was generated, and conveyed away in pipes, in its crude and impure state, to the burners; no method, at that time, having been contrived to free it from the impurities with which it was combined, the most obnoxious of which are sulphur in a gaseous state, and carbonic acid gas.

Barren Soils.

This term is often used, and is supposed by many to mean a soil incapable of being rendered fertile. No such soil exists. Barren then, is only applicable when intended to convey the idea of soil which, in its present state will not repay the cultivator.

The unproductiveness may arise from many causes, but none of them are without remedy. If from a deficiency of some of the earth, let them be added; if from an excess or deficiency of either animal or vegetable matters, the fault is easily corrected; if from stagnant water either under-drain or subsoil, as may be required; if sand, clay or chalk be deficient, add them; if either be in excess, add the other two. Peaty soils are generally reclaimed by draining alone; sometimes paring and burning are necessary to induce decomposition of organic matter in excess. The same result can be obtained in most of all cases, by the addition of the salt and lime preparation which we have recommended for composts.—When the soils are found to be imcompetent to produce any special crops required, the farmer should have them analyzed, and then compare their integrants with those of such soils as produce the required crop readily.—The difference will point out the means which must naturally be resorted to, for the purpose of restoring their fertility.

How to Make a Horse Sure-footed.

A singular account of the manners of the ancients in the matter of breaking in their horses and rendering them sure-footed when galloping over the most irregular and dangerous grounds, is related by Vegetius. The Parthian horses were lighter and hardier than those of the Cappadocians or Medes, and were the best war horses. A spot of dry level ground was selected, on which various troughs or boxes, filled with chalk or clay, were placed at irregular distances, and with much irregularity of surface and of height.—Here the horses were taken for exercise, and they had many a fall as they galloped this strangely uneven course; but they gradually learned to lift their feet higher and to bend their knees better, and to step sometimes shorter and sometimes longer, as the ground required, until they could carry their riders with ease and safety over the most irregular and dangerous places. Then it was that the Parthians could fully put into practice their favorite manœuvre, and turn upon and destroy their unsuspecting foes. They were as formidable in flight as in attack, and would often turn on the back of the animal and pour on their pursuers a cloud of arrows that at once changed the fortune of the day.

The letters now sent about Paris by the daily post amount to 260,000, or fifty per cent more than during the emeutes.

The Cotton Gin.

The following extract from De Bow's Commercial Review, will be read with a great deal of interest. The pecuniary advantage of this invention to the Uuited States is by no means fully presented by an exposition of the value of the exports of cotton (amounting to more than $1,400,000,000 in the last forty-three years,) nor by the immense proportion of the means which it has furnished this country to meet the enormous debts continually incurred for imports from Britain and the European continent—cotton having for many years constituted one-half, three-fifths or seven-tenths of the value of the exports of the Union. But it was the introduction of the cotton-gin which first gave a high value and permanent market to the public lands in the South-west. The rapid settlement and improvement of almost the entire State of Alabama, Mississippi, Louisiana, Florida, and Texas, is mainly due to the large production of cotton, consequent upon the invention of Whitney. The States of Georgia and Tennessee have also been largely benefitted by the same means, in the disposal of their domain, a vast portion of which must have remained unoccupied and valueless but for the immense increase of facilities for the preparation of cotton for the market. In the three States of Alabama, Mississippi and Louisiana, the sales of the public lands of the general government amounted to 18,099,505 acres, during the eleven years ending on the 30th of June 1844—yielding to the National Treasury more than $30,000,000. The sales of upland cotton lands by the United States land-officers, have amounted to many tens of millions of acres; and none have been sold at a lower rate than $1 25 an acre—a large proportion at a higher rate.

It is to be remarked, finally, that the cotton gins now in use throughout the whole South, are truly the original invention of Whitney—that no improvement or successful variation of the essential parts has yet been effected. The actual characteristics of the machine (the cylinder and brush,) the sole real instruments by which the seed is removed and the cotton cleared, remain, in cotton-gins of even the most recent manufacture, precisely as Whitney left them. The principle has not been altered since the first cotton-gin was put in motion by the inventor, though great improvements have been made in the application and direction of the moving forces in the employment of steam power, in the running-gear, and other incidentals. Every one of the various cotton-gins in use, under the names of different makers, contains the essentials of Whitney's patent, without material change or addition. The brush and the cylinder remain, like Fulton's paddle-wheel, unchanged in form and necessity, however vast the improvements in the machinery that causes the motion.

[We must tell our countrymen, that but for our inventors there would be a great deal of dry whistling among our cotton lords and cotton manufacturing baronets. Yet how have our inventors been treated, as a general thing. Why most all the inventions that have proved to be of real benefit and which have yielded the greatest profits, are just the very inventions for which the inventors were poorest remunerated. Many inventions have made their projectors rich, but it is to be regretted that so many good inventors, have sunk into the grave amid poverty and suffering.

Printer's Proverb.

Never inquire thou of the editor for the news, for behold it is his duty at the appointed time to give it unto thee without asking. When thou dost write for his paper, never say unto him, "what thinkest thou of my piece?"—for it may be that the truth may offend thee. It is not fit that thou shouldst ask him who is the author of an article, for his duty requires to keep such things to himself. When thou dost enter into his office, have a care unto thyself that thou dost not look at what may be lying open, for that is not meet in the sight of good-breeding. Neither examine thou the proof-sheet, for until ready to meet thine eye, thou mayest not understand it. Prefer the best conducted paper to any other, and subscribe immediately for it and pay in advance, and it shall be well with thee and thy little ones.

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TO CORRESPONDENTS.

"P. F. of C. W."—An electro magnetic engine is simple. It is simply a walking beam, connected at one end to a shaft by a crank, and the other end attached upwards by an electro magnet—and the circuit broken to give it a reciprocating motion. You may use one or more electro magnets and arrange them differently—employing them to attract both ends, but the principle is the same. There is also the electro magnetic rotary engine; it is very common and can be purchased at any philosophical instrument maker's.

"J. G. J. of Me."—Your letter of the 7th is received with contents. We are about making such arrangements as will warrant us to engage in the sale of your mills but as yet our plans are not fully consummated. We will write you by mail soon, and then inform you what we will do, and how much commissions we shall be obliged to charge you.

"C R. of Mass."—We have wrote twice for the claim but have not got it yet, but will in all likelihood in a few days. We are sorry for the delay, but cannot help it.

"T. S. of S. C."—You enquire, how you can braze cast iron. We should like to know how to do this ourselves, and so would thousands of others. You may fill up the holes of cast iron by molten metal in a certain way, and you can cement cast iron joints by a paste of iron filings and sal ammoniac. Copper and brass are brazed by spelter solder. The hard solder for brass or copper, is made with brass and one sixth of its weight of zinc. The surfaces to be soldered must be very clean and the solder laid upon the joint, it having been first wet with a solution of chloride of zinc by a feather, and the brazing iron then applied. You had better not try to force water the distance you represent, if you wish to keep the mill going.

"C. D. R and N. M of Ms." "T. & E. B. of N. Y." "G. W. of Me." "L. B. W. of Vt" "A. J. of R. I." and "D. C. F. of Va."—Your specifications and drawings have been forwarded to the Patent office and certificates of deposit sent as full payment for the amount of fees.

"R S. C. of Mich."—Your Camera Lucida was forwarded by express last Tuesday.

"H. S. of N. Y."—You will see the receipt upon our last page. It is the readiest way we could send it. Use more of the chlorate and sulphur, as you want them good. It is the gum that preserves them from moisture—isinglass is better however, but still nothing is a perfect proof against the damp.

"E. C. of P."—You will see by last Scientific American that Electro Magnetic engines are not new. We know not wherein Mr. Page's differs from others.

"W. H. D. of Ms."—Your machine for gold washing seems very novel and is certainly worthy the application for letters patent. It is the best machine we have yet seen for the purpose which you design it and at the present time the amount of sales would at once pay the expence of a patent—send on your model and your business shall be promptly attended to. The cost of making the application after you furnish us with a model will be $50 which amount pays all fees.

"H. W. C. of Ms."—Your patent business is progressing and the papers will be sent to you for signing next Monday.

"I. F. B. of Ga."—Your model has come to hand and your business shall receive immediate attention.

"E H. of Ms."—We shall send your caveat for signatures in a few days.

"J. M. M, C. E. of Pa."—Thank you for the favor of the 7th. We shall be pleased to hear from you at any time; those communications are well received.

We have a number of communications which we shall answer next week.

Next week we shall present splendid engravings of a new machine for Morticing the frames of Blinds. It is a beautiful and ingenious machine.

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This is a very neat and useful volume for 25 cents, by Joel H. Ross, M. D. of Amity st. this city. It treats of diet, exercise, air temperature, &c. and does so in a very pleasing and entertaining manner.

Bust of General Taylor.

We have received from Thomas Blanchard, Esq. a small marble bust of the President, carved by his machine. Those who are desirous of seeing the perfection of machine labor, can see the old hero, by giving us a call. The fidelity of the machine, far surpasses the hand. Its minute tracing defies all the skill of the artist.

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N. B. The subscriber having had fifteen years experience in the harness making business in England and upwards of six years in America hopes this will ensure him a share of public patronage. f10 6t*

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THE SUBSCRIBER has removed his Patent Agency from 189 Water to 43 Fulton street.

The object of this Agency is to enable Inventors to realize something for their inventions, either by the sale of Patent Goods or Patent Rights.

Charges moderate and no charge will be made until the inventor realizes something from his invention.

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THE Subscriber having received Letters Patent for an improvement in the Shingle Machine, is now ready to furnish them at short notice, and he would request all those who want a good machine for sawing shingles, to call on him and examine the improvements he has made, as one eighth more shingles can be sawed in the same given time than by any other machine now in use. Manufactured at Augusta, Me. and Albany, N. Y. J. G. JOHNSON.
Augusta, Maine, Oct. 28, 1848. o28 1y

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j13 3m. G. B. HARTSON

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d30 3m* Boston, Mass.

Z. C. Robbins,

Consulting Engineer and Counsellor for Patentees.

Office on F street, opposite Patent Office, Washington, D. C. j20 tf

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A Premium and Diploma were awarded by the New York Renssalaer Co. Fair, to S. Lichtenthaeler, for his patent Blind fixtures, being an apparatus for Opening and Shutting outside Window Blinds, from the inside of the house, without raising the sash.

Persons desirous of obtaining patent rights of this invention for any of the Southern or Western States, will apply to the undersigned Patentee (the rights for the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Michigan, Ohio, Pennsylvania, Delaware, Maryland, the 11 northern counties of New Jersey, and the District of Columbia, are all sold off.)
S. LICHTENTHAELER.
Litiz, Lancaster, Co., Pa.

NOTICE.—All power of attorney given to C. H. Farnham, has been cancelled, and is hereafter null, and void, and he is therefore no longer authorized to sell, or transact any business appertaining to the above invention for me S. LICHTENTHAELER.
j27 2m*

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New System of Oil-Painting.

M. Libertat Hundertpfund, the historical painter at Augsburg, has published a work, entitled "The Art of Painting brought back to its Simplest and Surest Principles," in which a very valuable discovery has been applied to the practice of oil-painting, so as to render it comparitively easy, and to ground it on an intelligible theory. While he was busied with experiments to find out a better mode of imitating the transparency of the natural shadow, a glass prism fell into his hands. This was a source of great delight to him. The colors produced by it, and their operation on each other, became an engrossing subject of his thoughts; and on one occasion his fancy led him to imagine the three primitive colours, —red, blue, and yellow—springing like rays from the centre of a circle to three equidistant points in its circumference, and affecting the intermediate spaces there by producing their three derivative colors,—purple orange, and green. This was a mere play of imagination; for at the moment of its occurrence he had not any idea of the discovery up to which he was subsequently led.

Shortly after this arrangement had occurred to M. Hundertpfund, his attention was accidentally drawn to an unfinished picture by Titian; and the state of it enabled him to remark that the shades of a red object there had been produced by under-painting them with green, —that is to say, Titian had first painted all the shadows with a green color, and had afterwards painted them over with red. This mode of under-painting was not quite new to M. Hundertpfund; for he had observed that landscape painters often produced the shadows of a green object by preparing them with burnt sienne,—and this tint appeared to his eye to partake more of red than of any other color. These two facts, as they travelled about in his mind, came there into company with his previously imagined circle of colors, and caused him to remark that if the radius (which indicates the ray of red color) were produced in a straight line to the opposite extremity of the circle, it would reach just that point at which the green would be predominant: and this observation induced him to establish in his own thoughts a particular axiom, namely, that green is the opposite—the antipodes of red. Following up this train of speculation, he began to believe that the success which attended Titian's practice of preparing red shadows with green color might be referable to a natural cause; and that such a cause might be equally operative with regard to color, so as to justify the esablishment of a general rule, that all shadows ought to be prepared with the opposite to which they relate. Proof was already before him that the shadow on red could be most effectually prepared with its opposite green; and it remained to be proved whether the shadows on green could not be prepared with its opposite red—and also, whether the shadows on the other primitive colors could not be prepared with their respective opposites. M. Hundertpfund found his theory justified not only with regard to the primitive colors and their derivatives, but also with regard to those tints which occupy the intermediate spaces in the circle between the primitive and derivative colors.

The different tints produced according to this system of oil painting are divided by M. Hundertpfund into colors, whole-tones, and half-tones:—

The colors are Primitive or Generic *i. e.* red, blue, and yellow, and—Derivative or Secondary *i. e.* violet, orange, and green.

The whole-tones are produced by a mixture of any two primitive colors in unequal proportions, *e. g.* red and yellow, so as to form a red orange or an orange red—or by a mixture of derivatives when any of the primitive colors become thereby predominant.

The half-tones are produced by an equally proportioned mixture of two derivative colors, *e. g* green and orange.

Chlorine.

Chlorine is a gas of a greenish-yellow colour. It derives its name from the Greek word, chloros, signifying greenish. Chlorine is nearly 2½ times as heavy as atmospheric air, and 36 times as heavy as hydrogen. Its combining proportion is 36, and its symbol cl.

The smell of chlorine is peculiarly disagreeable, if mixed in large proportion with atmospheric air, but if in very small proportion it is rather agreeable than otherwise, owing to the peculiar tendency of this gas to unite with and decompose most of the bad odours that are nearly always present in most apartments, and thus purifying the atmosphere; but great caution is required where large quantities of this gas are used in its pure state, for if taken into the lungs it may prove fatal; a very small quantity of the pure gas is sufficient to excite coughing and great irritation of the lungs and mucus secretion from the air passages.

Cold water absorbs about twice its volume of chlorine, therefore, in collecting this gas over water, the water should be first heated to about 100°. The solution of chlorine in water has a yellowish colour, its taste is astringent and nauseous, and when exposed to light the water is slowly decomposed, the hydrogen of the water uniting with the chlorine and the oxygen being liberated as a gas.

Chlorine may be obtained by mixing one part by weight of black oxide of manganese in powder, with two parts of common hydrochloric acid (spirits of salts) in a glass retort or flask, and applying the heat of a common spirit-lamp, the chlorine is immediately evolved and may be collected over water, by a bent tube, when a flask is used. Or the gas may be obtained from a mixture of eight parts common salt (chloride or sodium), 3 parts black oxide of manganese in powder, and 5 parts of sulphuric acid, diluted with 4 parts of water, previous to mixing with the other ingredients, and heating the ingredients as before.

To Make Cotton, or Linen Cloth Impenetrable to Water.

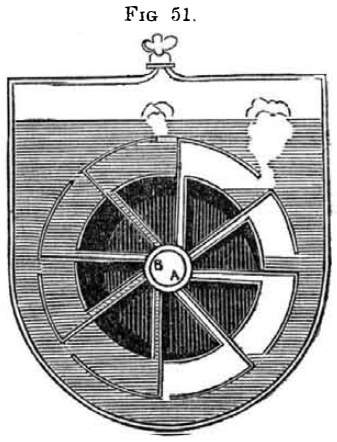
Wash the linen or cloth with hot water, then dry it and rub it between the hands till it is quite soft, when it should be spread out by nailing it on a frame or board with tacks. Next give it a coat of boiled linseed oil, mixed with calcined amber, some sugar of lead and some lampblack, about the thickness of paint. When this is dry, give it a second coat, except the sugar of lead, when in a few hours afterwards, in a warm day, it should be brushed down with a hard brush, and a third coat given, which will make the cloth a durable jet black. This is not a cheap receipt but it is a good one.

History of the Rotary Engine.

Prepared expressly for the Scientific American.

STEAM WHEEL.

FIG 51.



This is a steam wheel of American invention in 1808, but who the author is, we do not know, although we have delayed to publish it for a few weeks, trying to discover the inventor's name. Its power is derived from the tendency of light fluids to ascend, when immersed in those of greater specific gravity.

Fig. 51 is a wheel divided into cells and placed under boiling water. Each of these cells is connected, by any appropriate means, with a steam pipe, so that each receives the steam, when at the bottom; the floating power then brings the other cells in succession to be filled with steam, and the wheel is then put into full action. Where the expansive force only is used, the steam escapes from the top of the trough. Each cubic foot of steam in water, will give about sixty pounds of power. As the steam will expand as it rises up in the buckets, no more should be allowed to enter, than will fill them, when at the top of the wheel. The whole machine may be made of wood, in the form of a common bucket water-wheel; a steam pipe is introduced through the bottom of the trough, just under the side of the wheel where the buckets are inverted, when they become filled with steam in succession.

FIG. 52.

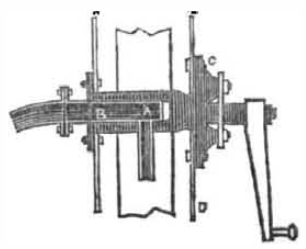


Fig. 52, is a plan for admitting the steam into the pipes leading to the cells; B is a hollow axis, communicating with the steam pipe; A is one of the eight hollow arms through which the steam passes to the cells. C is a stuffing box, and D an adjusting plate, with elastic packing. The steam tubes are of course covered up by circular plates, on each side of the wheel, to obviate the resistance in passing through the fluid.

Whatever may be said about this invention —its evident want of utility, and having been invented 40 years ago, we can say this much, which may be surprising to many, that a model of this very steam wheel was brought into this office about four weeks ago—a new invention of the individual who brought it. We are positive that he knew nothing about this one although it had been published in the old Mechanics Magazine. The inventor too, had come 600 miles to bring it before the public here.

Lucifer Matches.

The oxymuriate or chlorate of potass, is the principal substance used in the manufacture of our common matches. It is to be found at druggists and cannot be well prepared but in the labaratory. Other fulminating substances have been used, but the chlorate is the best. The way to make the matches is as follows:—Take 50 parts of the chlorate of potass in fine powder, 8 parts of sugar, 5 of powdered gum arabic, and enough of powdered vermillion or Prussian blue to color the mixture either blue or red. Mix these together with a knife on a clean paper and afterwards into a paste with a little water. Then add 20 parts of powdered sulphur and mix all thoroughly. Dip the ends of the matches into this mixture and allow them to dry in a proper oven or warm apartment. The gum keeps the atmosphere from injuring the fulminating mixture. These matches are ignited by drawing them over sand paper or a rough board.

Experiments with the Human Hair.

The Philadelphia Ledger says that Mr. P. A. Brown, of that city, has tried some experiments with his Trichrometer, (an instrument to test the tenacity of wool) upon the hair of Robert Hales the English giant, when it was found that his hair stretched to one half greater length before it broke. It is stated that in general the human hair does not stretch over one third its length. One single hair 1 inch long of the giant, who is 8 feet high, was loaded with 1323 grains before it parted—the average strength is only about 700. This experiment is both novel and interesting.

Recipe for White Swelling and Felons.

To cure white swellings and felons, a correspondent of the South-Western Farmer says, "take copperas, blue stone, alum, table salt, and flowers of sulphur, of each the size of a pea, put them into a four-ounce phial, and fill it with strong apple vinegar, and in twenty-four hours or less it is fit for use. If to be applied to a bone felon on the finger, the skin is to be pared with the razor, the phial being well shaken; wet lint, and apply it three times a day. It will instantly relieve pain, take out the fever, and effect a cure. If a sore leg, the sore must be washed twice a day with Castile soap,—then apply the wet lint." Most bruises and diseases of the flesh may be benefited, and generally cured, it is said, by this application.

Salt and Soot.

The power of soot as a top-dressing to either wheat or pasture land, is materially increased by the admixture of one fourth of common salt. In the fourth volume, p. 270, of the Royal Agricultural Society's Journal, it is stated that fifty-four bushels of soot and six of salt produced larger crops of Altringham and white Belgian carrots than twenty-three tons of stable manure and twenty-four bushels of bones, at half the cost. It is best to hoe the land, where used as top-dressing for wheat, after the soot is spread, as that prevents the evaporation of the ammonia, which is the most essential part of the manure. To mix it with lime is the most injurious, as that alkali causes the rapid dissipation of the ammonia. Mr. Dimmery, of Stinchombe farm, in Gloucestershire, England, uses nothing but soot as a manure for potato crops, which he grows in drills, using soot at the rate of twenty-five bushels to the acre.

Time for Cutting Timber.

There are various opinions on this subject; some persons preferring one season, and others another. But nearly all are agreed in the opinion that the spring is an unfavorable season, as the tree is then full of sap. Most mechanics, who attend to wood work, prefer timber that is cut in winter, or late in fall, after the season of vegetation, as it then has less sap than in spring. If the opinion that it contains less sap in winter than in spring is not correct, it is evident that the sap contained in the timber in winter has a less tendency to decay than that of spring.

To Preserve Grapes.

Grapes can be preserved during winter by keeping them in dry saw dust in a dry cool cellar. This plan preserves them so well, that when taken out in the spring, they are well flavored as when pulled from the vine.

German Silver.

4 parts copper, 1 part nickel, one part zinc. This is a good composition. Equal parts of copper and nickel make a beautiful alloy of a fine white color and susceptible of a fine polish.

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